

REMARKS

This amendment is submitted in response to the Official Action mailed April 4, 2008. Claims 1, 3, 4, 7-9, and 11-19 are pending. Claims 2, 5, 6, and 10 are cancelled. Claims 1, 8, 9, and 15 are amended to more particularly point out and distinctly claim the invention. In particular, claims 1 and 15 are amended to recite an immiscible polymer blend comprising high density polyethylene (HDPE) and polycarbonate (PC) or HDPE and a mixture of acrylonitrile-butadiene-styrene (ABS) and PC. Support for this amendment is found in the original claims and was made to clarify the composition of the polymer blend. Additionally, claims 1 and 15 are amended to provide that the amount of HDPE is greater than the amount of PC or the amount of the mixture of ABS and PC, which is supported in, for example, Tables III and IV and Figures 4 and 5 of the originally-filed application. Also, claims 8 and 9 are amended to remove reference to blends of HDPE and ABS. No new matter is added. In view of the above claim amendments and the following remarks, reconsideration by the Examiner and allowance of the application is respectfully requested.

Turning to the Official Action, claims 1-4, 7-9, and 11-19 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement because the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, the Office Action alleges that the application does not broadly disclose that HDPE and ABS have a modulus greater than the additive contribution of each. Blends of HDPE and ABS are deleted from the claims. Therefore, this rejection is respectfully traversed.

Claims 1-4, 7-9, and 11-19 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Office Action alleges that the claims recite numerous instances of “or” without indicating what the various recited polymers are alternatives to. As noted above, claims 1 and 15 are amended to recite an immiscible polymer blend comprising high density polyethylene (HDPE) and polycarbonate (PC) or HDPE and a mixture of acrylonitrile-butadiene-styrene (ABS) and PC. It is believed that this

amendment improves the clarity of the claimed subject matter. Therefore, this rejection is respectfully traversed.

The Office Action also rejects the term “lumber,” which appears in the claims. The Office Action states that “the term ‘lumber’ as generally used in the art pertains to wood and it is therefore unclear what applicants intend by ‘lumber’ as it pertains to plastic blends.” (Office Action, page 3). To further clarify the term “lumber,” claim 12 is amended to recite that the plastic article is formed into the shape of lumber. Therefore, this rejection is respectfully traversed.

Claims 1-4, 7-9, and 11-17 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,989,683 to Haddock. Additionally, claim 16 is rejected under 35 U.S.C. § 103(a) as obvious over Haddock. Haddock is cited as teaching ABS/PC blends. However, Haddock does not disclose or suggest the inclusion of high density polyethylene (HDPE) in an immiscible polymer blend with PC or HDPE blended with ABS/PC wherein the amount of HDPE is greater than the amount of PC or ABS/PC, as recited in independent claims 1 and 15 of the present application, as amended. Figures 4 and 5 set forth in the Rule 132 Declaration of Thomas J. Nosker, Ph.D. (“Nosker Declaration”), which was submitted with the previous amendment (a copy of which is also included herewith), relate to HDPE/ABS/PC blends (Figure 4) and HDPE/PC blends (Figure 5) in which the amount of HDPE is greater than the amount of ABS/PC or PC in the blends (see Tables III and IV in the Nosker Declaration). Figures 4 and 5 demonstrate that such immiscible polymer blends according to the present invention possess an unexpectedly high modulus compared to the expected modulus based upon the additive contributions of each polymer (e.g. HDPE and PC or HDPE and ABS/PC) to overall stiffness when the amount of HDPE is greater than the amount of PC or ABS/PC. Therefore, in view of the Nosker Declaration and the amendment to claims 1 and 15 to require the amount of HDPE to be greater than the amount of PC or ABS/PC, this rejection is respectfully traversed.

Claims 1, 4-9, and 11-19 are rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Publication No.

20020017743 to Priedeman, Jr. Priedeman, Jr. is cited as disclosing ABS/PC blends. However, Priedeman, Jr. does not disclose or suggest the inclusion of HDPE in an immiscible polymer blend with PC or a blend of HDPE, ABS, and PC, as recited in independent claims 1 and 15 of the present application. Furthermore, as mentioned above, the immiscible polymer blends of the invention as presently claimed possess unexpected properties. Therefore, this rejection is respectfully traversed.

Claims 1, 3, 8, 9, 11, 12, 15, 17, and 18 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over International Publication No. WO96/07703 to Farrah. Farrah is cited as disclosing "a composition which may contain ethylene polymers having a melt flow of 0.01g/10 min which is combined with polycarbonate having a melt flow rate of 3-150." (Office Action, page 5). However, the substantially linear ethylene polymers recited in Farrah are not HDPE. As recited at page 3, lines 31-32 of the present application, HDPE has a density greater than 0.940 g/cc. In contrast, the upper limit of the density of the ethylene polymers of Farrah is 0.935 g/cc. Additionally, Farrah does not disclose or suggest an immiscible polymer blend, which includes HDPE and PC or a blend of HDPE, ABS, and PC, wherein the ratio of HDPE to PC, or HDPE to the mixture of ABS and PC provides a blend having a modulus greater than the additive contribution of each polymer to overall stiffness and wherein the amount of HDPE is greater than the amount of PC or the mixture of ABS and PC, as presently claimed. Furthermore, as mentioned above, the immiscible polymer blends of the present invention possess unexpected properties that the Farrah composition cannot obtain because of the omitted components, which are needed to produce the properties depicted in Figures 4 and 5 of the Nosker Declaration. Therefore, this rejection is respectfully traversed.

Claims 1, 7-9, and 11-19 are rejected under 35 U.S.C. § 103(a) as obvious over Farrah in view of U.S. Patent No. 5,937,521 to March or U.S. Patent No. 6,001,491 to Bayer. March and Bayer are cited as disclosing thermoplastic marine pilings and railroad ties. However, neither March nor Bayer discloses or suggests immiscible polymer blends of HDPE and PC or HDPE and ABS/PC. Therefore, neither March nor Bayer remedies the defects of Farrah because neither publication teaches or suggests modification to the Farrah compositions that

would produce a material with the unexpected physical properties of the inventive compositions as presently claimed.

Claims 1-4, 7-9, and 11-19 are rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,334,647 to Sperk in view of March or Bayer. However, Sperk does not disclose or suggest an immiscible polymer blend, which includes HDPE and PC or a blend of HDPE, ABS, and PC, wherein the HDPE has a melt flow at 190°C/2.16Kg of less than about 1g/10min, and the PC or mixture of PC and ABS has a melt flow at 190°C/2.16Kg greater than about 1g/10min and wherein the ratio of HDPE to PC or HDPE to the mixture of ABS and PC provides a blend having a modulus greater than the additive contribution of each polymer to overall stiffness and wherein the amount of HDPE is greater than the amount of PC or the amount of the mixture of ABS and PC, as presently claimed.

At Column 2, lines 46-66, Sperk generally discloses blending or compounding at least two immiscible thermoplastic polymers. Sperk further provides a long list of useful thermoplastic polymers beginning at Column 5, line 1 to 4 and ending at Column 12, line 51. HDPE appears once in Sperk at Column 12, lines 21-22 and is never recited in combination with PC or ABS/PC.

Additionally, as shown in Figures 4 and 5 of the accompanying Nosker Declaration, the immiscible polymer blends of the present invention (e.g. HDPE and PC or HDPE and ABS/PC) possess an unexpectedly high modulus compared to the expected modulus based upon the additive contributions of each polymer to overall stiffness when the amount of HDPE exceeds the amount of PC or ABS/PC. Therefore, this rejection is respectfully traversed.

Claims 1, 3, 7-9, 11-15, and 18-19 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Mekhilef et al. "Weld lines in injection-moulded immiscible blends: model predictions and experimental results," Polymer 36(10), pp. 2033-42 (1995). However, Mekhilef et al. does not disclose or suggest an immiscible polymer blend, which includes HDPE and PC or a blend of HDPE, ABS, and PC, wherein the ratio of HDPE to PC, or HDPE to the mixture of ABS and PC provides a blend having a modulus greater than the additive contribution of each polymer to

overall stiffness, let alone that this is obtained by using an amount of HDPE is greater than the amount of PC or the mixture of ABS and PC, as presently claimed. The only amounts Mekhilef et al. specifically discloses are in a composition having a weight ratio of HDPE:PC of 20:80. (See Mekhilef et al., page 2036). As shown in Figures 4 and 5 of the accompanying Nosker Declaration, the immiscible polymer blends of the present invention (e.g. HDPE and PC or HDPE and ABS/PC wherein the amount of HDPE is greater than the amount of PC or the mixture of ABS and PC) possess an unexpectedly high modulus compared to the expected modulus based upon the additive contributions of each polymer to overall stiffness. Therefore, this rejection is respectfully traversed.

Claims 12-14, 16, and 17 are rejected under 35 U.S.C. § 103(a) as obvious over Mekhilef et al. in view of March or Bayer. March and Bayer are cited as disclosing thermoplastic marine pilings and railroad ties. However, neither March nor Bayer discloses or suggests immiscible polymer blends of HDPE and PC or HDPE and ABS/PC let alone the specific blends of HDPE and PC or ABS/PC as presently claimed with the unexpectedly superior performance properties. Therefore, neither March nor Bayer remedies the defects of Mekhilef et al.

Finally, enclosed herewith is a copy of the uninitialed IDS originally submitted listing CA '487 mentioned in the Office Action at page 10. The Office Action indicates that this document has been considered. Applicants would greatly appreciate receiving an initialed copy of this IDS.

CONCLUSION

In view of the above claim amendments and the foregoing remarks, this application is believed to be in condition for allowance. Reconsideration is respectfully requested. However, the Examiner is requested to telephone the undersigned if there are any remaining issues in this application to be resolved.

Finally, if there are any additional charges in connection with this response, the Examiner is authorized to charge Applicant's deposit account number 50-1943 therefor.

Respectfully submitted,

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